

REMARKS

This is in response to the Official Action dated October 6, 2003, which rejected claims 1-5, all the claims pending in the application.

Claims 1-5 were rejected under 35 U.S.C. 103(a) as being unpatentable over Scruggs, U.S. Patent No. 4,484,750 in view of Herd, U.S. Patent No. 4,340,204.

Scruggs discloses a high pressure seal joint for pipe joints, valves, housing closures and like structures subjected to heat and high pressure fluid conditions where it may be important that the fluid be kept from leaking from the joint and in the event of leakage, that means be provided for quick, easy and effective repair of the leaking joint. For example repair of leaking joints in the steam pipes of a power plant presently may require time consuming disassembly to replace seal material to correct leakage at the joint.

Scruggs invention contemplates a high pressure seal joint utilizing a meltable seal material between first and second members in the joint to reform a seal between the members in situ without loss of the seal material from the joint.

More specifically, the Scruggs invention includes etc. from the abstract.

The Scruggs invention is embodied in a joint construction particularly designed for use in high pressure and heat environments to keep fluid from leaking between two different members 10 and 11 while providing for quick and easy resealing in the event that leakage should occur. For example, a joint 13 may be used

to connect together a butting end of steam pipes in a nuclear reactor or in attaching a valve housing to a pipe or any other construction where the loss of a seal in the joint may otherwise require extensive, time consuming disassembly procedures to be followed in order to correct the leakage. According, the Scruggs invention contemplates construction of the joint 13 with a reservoir 14 containing a mountable metal seal material 12 disposed between surface sections 15 and 16 on the members 10 and 11, respectively, and quell means 17 within the joint to keep the material from flowing by capillary action from between the members when the material is heated and melted to form sealing contact between the members 10 and 11. In Scruggs Figs. 1 and 3, lower member 11 in the form of an end fitting is secured to the lower pipe 20 with the later being received within an annular recess 21 and permanently attached to the fitting 11 such as by brazing. The upper end of the lower fitting includes a substantially flat end surface 23 extending radically outwardly from a central opening 24 aligned with a central passage 25 through the pipe. In similar fashion, an upper member or upper fitting 10 is secured to the upper pipe and includes an end surface 26 facing the surface 23 of the lower fitting 11. In use, the two surfaces 26 and 23 of the upper and lower fitting members 10 and 11 about each other with a mechanical connection means 27 securing the members against separation. To keep heated high pressure fluid from leaking between the upper and lower members 10 and 11 of the joint 13, seal material 12 is disposed between the members 10 and 11 within the reservoir 14. The reservoir 14 is defined by a continuous annular groove 14 formed

in the lower fitting 11 and opening facing up.

Mating with the groove 14 is an annular projection 40 which is formed integrally with the upper member 10 and protrudes in generally axial direction downwardly from the upper end surface 26.

Preferably the depths of the groove 14 beyond the distance which the projection 40 extends into the groove is such as to be no less than twice the thickness of the main capillary clearance existing between the upper and lower surfaces 10 and 11. Additionally, the extent to which the rejection protrudes in the groove is approximately 5 times the width of the clearance between the adjacent sidewalls 39 and 40 of the groove and projection, respectively, so that, when the seal material 12 is melted, cooling occurs first between these side walls. In this way, it is believed any voids which might develop in the seal material will be concentrated within the reservoir 14 without weakening the strength of the seal between the members 10 and 11.

In accordance with the feature of the Scruggs invention, melted seal material 12 is kept from being lost from between the upper and lower members 10 and 11 through the use of novel quell means 17 in one of the members to keep the melted material from flowing by capillary action through the capillary clearance space between the members. For this purpose, a non-capillary reset 17 is formed in the member adjacent the projection 40 as an interruption to potential flow of metal through the capillary clearance space. Advantageously, as a result of this

construction, repeated heating and reforming of the effective sealing contact between the members is possible without having to disassemble the joint 13 or having to replace lost material.

In Scruggs, to keep the seal material from flowing by capillary action out of the joint 13 the seal material is formed of a meltable metal. Additionally, while the wetting of surfaces on the members 10 and 11 is desirable to create an effective seal, the use of flux and bonding of the seal material to either of the members is avoided in order to keep the seal material as a cohesive mass to aid in sealing when reheating to reform the seal after a leak has occurred.

On the other hand, applicant's invention relates to chromatography, and more particularly concerns a new inlet seal assembly and method for use with gas chromatography instruments. This is quite different from Scruggs concern with pipe joints, valves, housing closures and the like, structures subjected to heat and high pressure fluid conditions, for example repair of leaking joints and steam pipes of a power plant without requiring time consuming disassembly to replace the seal material to correct leakage at the joint.

The Examiner suggests replacing the meltable metal seal material 12 with the non-meltable sealing material of Herd. But this would defeat the purpose of Scruggs and prevent Scruggs from replacing a leaking seal from the outside without disassembly by merely reheating the meltable seal material. To substitute the seal material of Herd for the seal material of Scruggs would require disassembly of the

modified Scruggs seal assembly to open up the seal and remove the leaking seal material and replace it with like material.

Replacing seal material in Applicant's invention in a gas chromatography instrument is not a time consuming, expensive or onerous job. You do it with the fingers, which is not possible with the Scruggs device which requires large tools and equipment.

Rejection of the claims based on the Scruggs U.S. Patent No. 4,484,750 in view of Herd, U.S. Patent No. 4,340,204 is erroneous because both of those references are from a non-analogous art, and the references were improperly combined. The references were neither in the same field endeavor as the inventor's endeavor, nor were they reasonably pertinent to the particular problem which the inventor or fix the inventor was involved. In Re Clay, 23 U.S.P.Q. 2d 1058, 1060 (Fed. Cir. 1992).

The Court cited two criteria that have evolved in making this determination as to whether or not the references are analogous. Whether the art is in the same field of endeavor, regardless of the problem addressed; (and too,) if it is not in the same field, whether the reference still is reasonably pertinent to the problem which the endeavor is involved.

Scruggs is involved with the problem of repairing a leak in a retro seal pipe joint without disassembling a joint.

Scruggs gives an example in his column 1 and says, "On pipe joints, valves, housing closures and like structures subjected to heat and high pressure fluid conditions, it may be important that the fluid be kept from leaking from the joint and in the event of leakage, that means be provided for quick, easy and effective repair of the leaking joint. For example, repair of leaking joints in the steam pipes of a power plant presently may require time consuming disassembly to replace seal material to

correct leakage at the joint.”

Herd is in the field of high pressure valves and is concerned with three loaded, stacked, lubricated stem seals. More particularly, his invention relates to valves and to the temperature and chemical resistance, high pressure gate valves. These valves are used in gas wells which have been drilled in very high pressure soured gas fields.

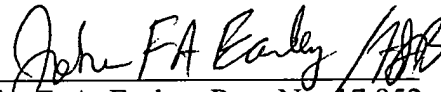
This is far from the chromatography field with which applicant's invention deals.

There is no motivation in Scruggs, or in Herd, or in the combination of the two references, to substitute the seal rings 213 of Herd which are of Teflon, Molly-Teflon, Grafoil and the like for the seals in Scruggs because that would destroy Scruggs purpose of providing a midnotable seal ring.

If necessary, an appropriate extension of time to respond is respectfully requested.

The Commissioner is authorized to charge any additional fees which may be required to Patent Office Deposit Account No. 05-0208.

Respectfully submitted,
HARDING, EARLEY, FOLLMER & FRAILEY
Attorneys for Applicant



John F. A. Earley, Reg. No. 17,952
John F.A. Earley III, Reg. No. 31,350
Frank J. Bonini, Jr., Reg. No. 35,452
Charles L. Riddle, Reg. No. 54,779
86 The Commons at Valley Forge East
1288 Valley Forge Road
P. O. Box 750
Valley Forge, PA 19482-0750
Telephone: 610-935-2300

Date: 4/6/04